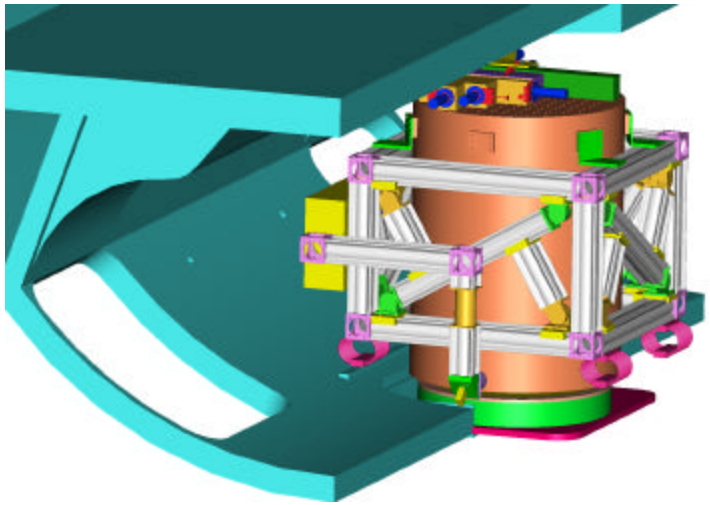
Raman Airborne Spectroscopic Lidar (RASL)

- Airborne Raman Lidar under development through IIP1
- Main measurements:
  - Water vapor (day, night)
  - Aerosol scattering, extinction, depolarization (day, night)
  - Cloud liquid water (night)
- Laboratory demonstration by the end of IIP 1
- Technology improvements and flight test proposed to IIP2
- Replacement of oxygen filter by CO_2 filter permits the profile of CO_2 to be measured

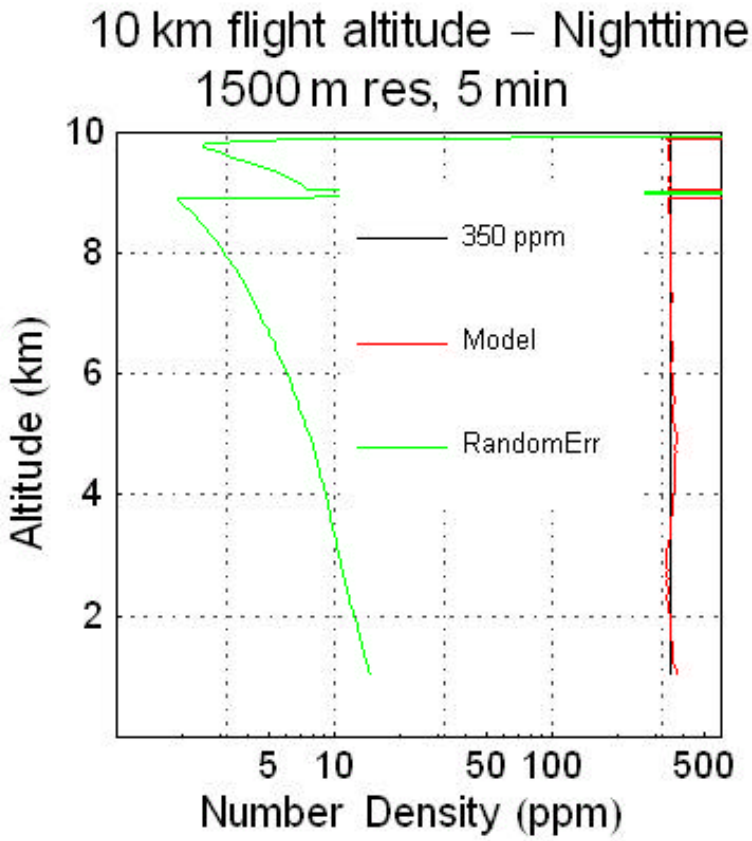


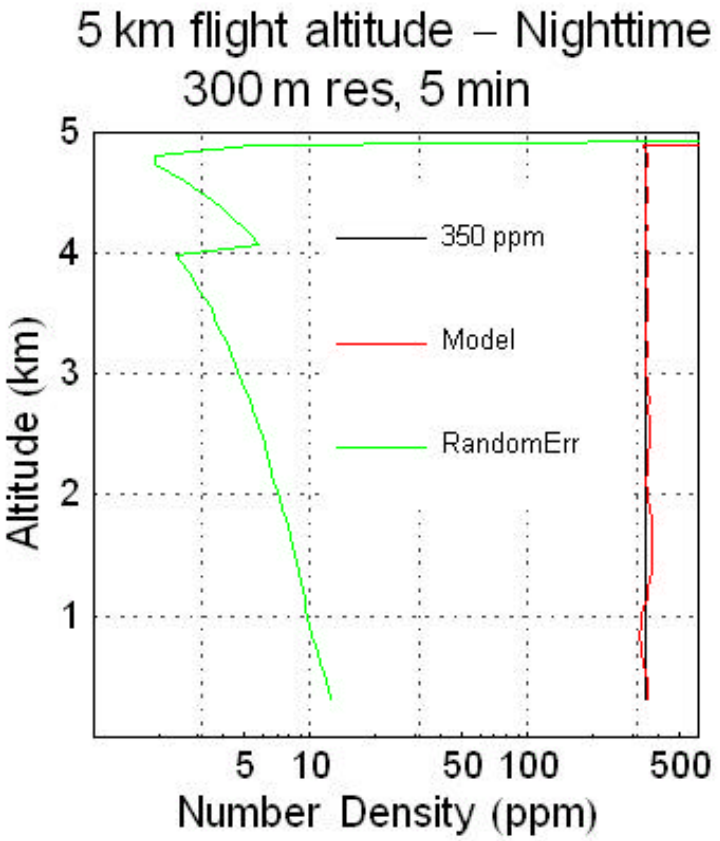
RASL in the DC-8 cargo bay

RASL Components

- Tripled Nd:YAG laser
- 24” athermal telescope
- 7.5 meter range resolution
- Fiber optics port for additional measurements
- Designed for DC-8 and P-3 compatibility

RASL Simulations as CO_2 Profiler





Increased integration time (repeated sampling of an area) could be done to improve precision (e.g. an X or box pattern to study horizontal fluxes through the sides of the box). If using a 15 minute average, divide the errors shown by 1.7 Degraded vertical resolution achieves the same effect.